

CLAIMS

1. A transparent filter comprising a sheet-shaped body and numerous linear conductive elements arrayed on a surface thereof, which is adapted to be disposed in front of an image device having rectangular pixels; wherein the conductive elements with a linewidth of 50 μm or less are arrayed on the sheet-shaped body in two directions with a pitch P1 and a pitch P2, respectively; an aperture ratio of the filter is not less than 70 %; and when lengths of a pixel of the image device in vertical direction Y and in horizontal direction X are denoted by W1 and W2, respectively, P1, P2, W1 and W2 satisfy one of relations expressed by following equations, that is, both Equation (1) and Equation (2), both Equation (3) and Equation (4), both Equation (5) and Equation (6), or both Equation (7) and Equation (8),

$$n1 + 0.35 \leq W1/P1 \leq n1 + 0.65 \quad (1)$$

$$n2 + 0.35 \leq W2/P2 \leq n2 + 0.65 \quad (2)$$

$$n1 + 0.35 \leq P1/W1 \leq n1 + 0.65 \quad (3)$$

$$n2 + 0.35 \leq P2/W2 \leq n2 + 0.65 \quad (4)$$

$$n1 + 0.35 \leq W1/P2 \leq n1 + 0.65 \quad (5)$$

$$n2 + 0.35 \leq W2/P1 \leq n2 + 0.65 \quad (6)$$

$$n1 + 0.35 \leq P1/W2 \leq n1 + 0.65 \quad (7)$$

$$n2 + 0.35 \leq P2/W1 \leq n2 + 0.65 \quad (8)$$

(Each of n1 and n2 is an integer from 1 to 5).

2. The filter according to Claim 1, wherein P1 and P2 are different in length.

3. The filter according to Claim 2, wherein either P1/P2 is not less

than 1.05 or $P1/P2$ is not greater than 0.95.

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4. The filter according to any claim from Claim 1 to Claim 3, wherein linear conductive elements are metal lines.

5. The filter according to any claim from Claim 1 to Claim 4, wherein the surfaces of conductive elements are blackened.

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6. The filter according to any claim from Claim 1 to Claim 5, wherein an average transmittance of the sheet-shaped body for a light beam is not higher than 30 % in a wavelength range of from 850 to 1000 nm and not lower than 40 % in a wavelength range of from 400 to 650 nm.

7. A multi-layered filter comprising layers of the filter according to any claim from Claim 1 to Claim 5 and a sheet-shaped body whose average transmittance for a light beam is not higher than 30 % in a wavelength range of from 850 to 1000 nm and not lower than 40 % in the wavelength range of from 400 to 650 nm.

8. An image device with a filter, wherein the filter is the filter according to any claim from Claim 1 to Claim 7, being disposed in such a way that narrower acute angle $\theta 1$ which is formed by the directions of lengths for the linear conductive elements thereon with vertical direction Y of the image device, and narrower acute angle $\theta 2$ which is formed by the directions of lengths for the linear conductive elements thereon with horizontal direction X of the image device, respectively, are set within a range of from 0 to 18 degrees.

9. The image device according to Claim 8, wherein each of the angles $\theta 1$ and $\theta 2$ is set within a range of from 3 to 18 degrees.

10. The device according to Claim 8 or Claim 9, wherein the image device is a plasma display panel.